

REMARKS

The application has been amended and is believed to be in condition for allowance.

Applicant acknowledges with appreciation the indication that claims 4-6 and 8 were directed to allowable subject matter.

New claims 14-16 correspond to allowable claims 4, 5, and 8, drafted to be in independent form including the base claim and any intervening claim. The phrase "characterised in that it is obtained either by a hot-extrusion operation or by a material-removing machining operation," has been omitted as the Official Action stated that this phrase is not given any patentable weight. Claims 17-19 are based on this feature.

Allowance of claims 14-19 is therefore solicited.

The specification has been amended to add section headings.

Claims 1-3 and 11-13 were rejected as anticipated by, or render obvious by, KUN 3,528,496.

Claim 7 was rejected as obvious over KUN in view of UENO JP 0919780.

Applicant respectfully disagrees.

KUN does not disclose thick sheet metal.

KUN does not disclose a device with the recited ratio of thickness to geometric pitch.

KUN discloses fins made from thin sheet-metal, the thickness of which is substantially equal to 0.005 inch (i.e.

0.127 mm). See, for example, column 6, line 60; column 8, line 46; column 9, line 29; and column 10, line 4.

This feature is contradictory with the definition of claim 1, according to which the fin is made from a "thick sheet-metal". As mentioned in the description of the present patent application (page 3), the term "thick" reads as having a thickness greater than approximately 1 mm, what is more than seven times the thickness disclosed in KUN. Claim 1 has been so amended.

The invention includes features of the process used to obtain the fin, such as recited in claim 1, as they determine structural features of the fin.

One main reason is that some profiles which can be obtained by hot-extrusion or material-removing machining from a thick sheet-metal cannot be obtained by folding. For example, it is clearly impossible to obtain a fin of the type illustrated on Figure 3 by folding.

A further main reason is that the metal forming the fin has local mechanical properties depending on the process used to produce the fin. For example, where the fin is produced from the sheet-metal by folding, the folded areas of the metal are subjected to local mechanical stresses, which do not exist in the fins obtained by extrusion or machining. In use, the behavior of the fin is strongly influenced by such mechanical properties,

considering the deformations and breakage risks due to the temperatures and pressures to which the fin is submitted.

KUN teaches to produce a heat exchanger with a "fin density" between 30 and 80 fins/inch transverse to the direction of fluid flow. See column 11, lines 23-24 and claim 1.

In addition, KUN teaches that problems occur when the fin density is greater than 80 fins/inch (see column 4, lines 38-40), whereby one skilled in the art would refrain from selecting a density greater than 80.

Although no definition of the "fin density" is given by KUN, one would understand that it could be defined by the number n of corrugation flanks in a length of 1 inch, in the transverse direction.

Accordingly, 1 inch = n x (e+d), where e is the thickness of the fin, and d is the distance between two flanks of the fin.

The ratio [thickness]/[geometric pitch] is then:

$$\frac{e}{p} = \frac{e}{2(e+d)} = \frac{n.e}{2}$$

According to KUN, e = 0.005 inch and n < 80 fins/inch.

Thus,  $\frac{e}{p} < 0.2$ .

This feature is contrary to the definition of claim 1, wherein:  $\frac{e}{p} \geq 0.2$ .

Accordingly, the thickness of the sheet metal, the ratio [thickness]/[pitch], and the operations of extrusion or machining, as defined in claim 1, are distinctive features over KUN.

From the above, applicant believes it is clear that KUN neither anticipates nor renders obvious independent claim 1. Accordingly, the rejection of claim 1 is not believed to be viable. The claims depending from claim 1 are believed to be allowable at least for depending from an allowable claim.

Reconsideration and allowance of claim 1 as well as the claims depending therefrom are respectfully requested.

Please charge the fee of \$200 for the extra independent claim added herewith, to Deposit Account No. 25-0120.

The Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 25-0120 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17.

Respectfully submitted,

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Appendix:

The Appendix includes the following item:

- new Abstract of the Disclosure